Hyaline cartilage between bone tissue of 2 centers

Cartilagenous joint, temporary synchondroses

Endochondrial ossification organized into zones

Between diaphysis and epiphysis of long bone

Formation of Plate

Epiphyseal Plate

5 Zones

Zone of reserve cartilage

Nearest to epiphysis, normal hyaline cartilage, attach cartilage to bony epiphysis

Zone of proliferation

Chondroblasts-->rapid proliferation, columns of flattened cells (isogenous=one stem cell), ECM forces cells apart

Interstital growth

Zone of maturation and hypertrophy

Chondrocyts round up and enlarge, secrete alkaline phosphotase, matrix decreases

Zone of Calcification

Cartilage matrix becomes mineralized-->cells cut off from nutrients--> death, Last 2 rows of enlarged cells adjacent to resorption front

Zone of Ossification

Blood vessels invade cartilage matrix and erode it, dead chondrocytes and uncalcified cartilage matrix are removed

Resorption front=invasion zone

Spongy bone = primary spongiosa = zone of primary ossification

Blood vessels bring in osteoprogenitor cells

Migrate to surface of remaining cartilage matrix

Differentiate into osteoblasts on calcified cartilage matrix

Lay down bone osteoid on cartilage surface

Cartilage mineralizes

WOVEN bone deposited

Longitudinal trabeculae